



Decarbonizing private air travel

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The Problem

Private jets are 5 to 14 times more polluting than commercial planes (per passenger),* making them the single most polluting form of transportation. Yet, they boost economic growth by offering an incredibly efficient mode of transportation for business leaders.

Source: *Transport & Environment

Why Now

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To meet industry net zero carbon emissions by 2050, there will be a need for ~25,000** new private aircraft over the coming decades.

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Our Solution

A **6 passenger** hybrid electric aircraft with a **1,100 mile** range to decarbonize the most frequently flown missions while reducing fuel burn by up to 50% and CO2 emissions by up to 90%



Sources: *National Business Aviation Association

N1000 Technical Overview

Using today's batteries (400 - 500 Wh/Kg) with SAF powering fully electric engines for long range



"Nimbus Aerospace represents a new class of aircraft designed for both efficiency and environment-friendly to move forward in the next decades." Hsin-Hua Tsuei, Ph.D., Fluid Dynamics Specialist at Aerodynamic Solutions Inc.

Lightweight airframe:

To improve thrust-to-weight ratio

Aerodynamic Airframe:

N1000 current max lift-over-drag (L/D) is 14. Optimizing for an L/D of 18, making N1000 very aerodynamically efficient.

2 Rear mounted fully electric engines ~3,600 lbs of thrust each 720mm motor diameter and 2.25MW each

Batteries embedded into structural components: To reduce weight 3 Packs ~ 168 kWh each Nimbus Ae

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Market Validation

America is the largest private jet market and we will launch here first



There are 14,632 private jets in the US or ~ 62.5% of the world's fleet*



36.5% of the market is made up of light jets like the N1000*

Market Size

Projected global business jets deliveries are up 15% over the next decade*

Estimated 3,740 new light business jet sales globally over the next decade**



Business Model

Target ultra-high-net-worth Americans who fly at least 150 hours per year (75%+ of travel being business-related) and have a budget between 7 to 12 million dollars



Go to Market Strategy

Sales began in Dec. '24, and we have 1 LOI valued at 11.5 million, and a 3 part plan to secure additional letters of intent



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Our Roadmap

Our journey from inception until 2030



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Our Competition

N1000 is the only plug and play solution capable of competing with legacy aircraft

	N1000	Eviation Alice	Beyond Aero	Odys VTOL	Legacy Aircraft
Sustainable	~	 	~	~	
Certification Timeline	~				~
Infrastructure Readiness	~				~
Low Operating Cost	~	 		~	
Long Range	~				~
Fast	~				~

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Team

Merging engineering and business experience with the backing of Techstars and world class advisors



Adrian Groos Co-Founder and CEO

- Ex. Product Manager who led engineering teams, bringing products from 0 to 1
- Aviation industry insider with a self-taught proficiency in the core principles of aircraft design



Brian Morgan

Chief Engineer and Advisor

- 25+ years of experience in aircraft design
- Experience building fully conforming models and rapid prototyping



- Ex. Engineer at Bombardier, worked on the Global, Challenger, and Learjet aircraft
- A 2022 NASA Hackathon finalist and recognized aerospace alumnus by Wichita State University



Téva Venet Founding Design Engineer

- Ex. Flight Sciences and Aerodynamics Engineer at Raytheon
- Experience in performance validation testing

Our Ask

1.6 Million to build and flight test a ¼ model and begin FAA certification by 2025 [150K committed]



Contact Us

We are a small team based in Seattle, WA made up of aerospace engineers and insiders with the mission to make private air travel sustainable



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Check us out: <u>www.nimbusaerospace.com</u>

Recent press:

<u>The American Society of Mechanical</u> <u>Engineers | Wichita State University</u> <u>Foundation | Aviation International</u> <u>News</u>

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Appendix

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Appendix 1: 1/10 Sub-Scale Models

In 4 weeks, we built and flight tested 2 models: XSS1 and XSS2 using bespoke and off the shelf parts



Specs: Both models are: 68.10in long, and 16.40in tall

- XSS1: 8.56lbs | 62.50in wingspan | 617.10 sq.in. wing area | 2x 70mm 6S motors | 1x 6S 6000mAh battery
- XSS2: 14.86lbs | 72.70in wingspan | 832.30 sq.in wing area | 6x 58mm
 4S motors | 4 battery packs: 2x 4S 5000mAh 1x 4S 5200mAh 1x 4S
 1800 mAh

Conclusions: XSS2 proved that the complexity and added weight from a Distributed Electric Propulsion (DEP) and Fan Over-Wing (FOW) configurations offer no gains or distinct advantages at all

- NSS1 was in the air for ~4 mins and 38 seconds with 30% reserve while NSS2 flew 1 min and 23 seconds with 4% reserves
- No increase in aircraft speed, cargo capacity, or extended range can be had by using or adding any form of DEP system

What's next: Based on the flight tests and Computational Fluid Dynamics (CFD), we will begin to build a high-performance ¼ scale based off of XSS1

Appendix 2: CFD Overview

CFD Testing Criteria: Take off and cruise condition at various angle of attack

- Pressure contours simulation: Models the performance of the aircraft based on the pressure distribution on the aircraft surface.
- Skin-friction contours simulation: Models the performance of the aircraft based on the shear stress distribution along the aircraft surface.
- Lift vs Drag simulation



- The L/D graphs show expected aerodynamic performance.
- This shows that it has low drag but has flow separation at an early angle of attack.
- This shows that it generates high lift and has a low stall speed.

Angle of Attack: 3 (takeoff condition)



- Angle of attack: Angle between the A/C longitudinal axis and relative wind during forward flight.
- Lift: Lift generated by a lifting body to the fluid density around the body, the fluid velocity, and an associated reference area.
- **Drag:** Quantifies the resistance an object experiences when moving through a fluid.

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Appendix 3: Motor Specifications

We are working with Duxion while also evaluating H3X motors. Duxion is preferred.



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Appendix 4: Battery Specifications

N1000 hybrid power plant is partially Amprius batteries. Amprius is a California based company on the cutting edge of battery technology. The cells we use will be manufactured in their super factory in Colorado and are readily available.



https://amprius.com/

Battery specifications needed:

3 battery packs

Total Voltage: 340 - 480 VDC x 2 motors Energy Capacity: 504 kWh

Appendix 5: N1000 Use Cases

N1000 has range for many nonstop missions

Performance:

Maximum Range: 1,100 mi

Cruise Speed: 398 mph

Max speed: 421 mph

Initial Cruise Altitude: 30,000 ft

Maximum Cruise Altitude: 40,000 ft

Weights:

Maximum Takeoff (MTOW): 22,000 lbs

Empty Weight: 14,000 lbs

Maximum Payload: 2,250 lbs **Mission**:

Takeoff Distance: 0.89 miles

Climb Distance: 100 miles

Cruise Distance: 1,000 miles

Descent Distance: 100 miles



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Appendix 6: Business Model

Based on current data, 24 planes would result in a successful first year of deliveries



- The Phenom 300e is the best selling light jet and Embraer delivered 59 in 2022.**
- Honda delivered 37 Hondajets in 2021.***
- Unlike commercial plane manufacturers, private jet manufacturers do not sell thousands of an aircraft type.

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Appendix 7: Funding Overview

F&F + starter capital: 520K

Initial wind tunnel test, completed CAD and computational fluid dynamics, flight tested 1/10 models, and secured 1 LoI valued at 11.5 million

Pre-Seed: 1.6M

Build and flight test ¼ scale model, finish ACT V1, and begin FAA certification (secure 5 - 10 LoIs valued at \$57.5 - \$115M)

Seed: ~7M

Finalize full scale structural design, and controls implementation (secure 30 LoIs valued at \$345M)

Series A: ~35M

Finalize systems design, and avionics integration (begin working with suppliers) (secure 70 LoIs valued at \$805 - Million)

Series B: ~95M

Company building, build full scale prototype, (secure 150 LoIs valued at \$1.7B)

Series C: ~125M

Finish prototype testing, and start production facility construction (secure 320 LoIs valued at \$3.7B)

Series D: ~200M

Finish FAA certification, and prepare for production (secure 650 LoIs valued at \$7.5B) Late Stage Capital: ~200 Million Start production ramp N1000 is a conventional fixed-wing aircraft with a hybrid powertrain. It resembles a Cessna Citation, follows familiar FAA certification paths, and uses pre-certified parts. We don't manufacture the engines, battery, or generator—our providers handle their certification, reducing costs and speeding up certification.

Estimated Total: ~700 Million: Figure includes \$150–\$200 million for a production facility construction. This is our total amount needed, best estimate, but it is subject to change.